

WHAT IS CLAIMED IS:

1. A method for encoding an image region using a transform, the method comprising:

generating for each transform point a double difference coefficient, wherein the

5 double difference coefficient comprises a difference between a raw difference coefficient and a modeled difference coefficient; and

encoding as an adaptive difference coefficient for each transform point either the double difference coefficient or the raw difference coefficient, wherein whether the double difference coefficient or the raw difference coefficient is selected to be the adaptive  
10 difference coefficient depends on which one provides more efficient coding.

2. The method of claim 1 wherein image region comprises an exposed region of an image.

3. The method of claim 1 wherein the transform comprises a pyramidal transform.

15 4. The method of claim 2 wherein the pyramidal transform includes more than three levels of transformation.

5. A method for decoding an image region using a transform, the method comprising:

receiving adaptive difference coefficients from an encoder;

modeling the image region to generate a modeled region;

5 transforming the modeled region to generate modeled difference coefficients;

determining corrective difference coefficients using the adaptive difference coefficients and the modeled difference coefficients; and

inverse transformation using the corrective difference coefficients.

6. The method of claim 5 wherein the adaptive difference coefficients comprise  
10 double difference coefficients and raw difference coefficients.

7. The method of claim 6 wherein, if the adaptive difference coefficient at a transform point is the raw coefficient, then the corrective difference coefficient at the transform point comprises the raw difference coefficient.

8. The method of claim 7 wherein, if the adaptive difference coefficient at a  
15 transform point is the double difference coefficient, then the corrective difference coefficient at the transform point comprises the modeled difference coefficient minus the double difference coefficient.

9. The method of claim 5 wherein the transform comprises a pyramidal transform.

20 10. The method of claim 9 wherein the pyramidal transform includes more than three levels of transformation.

11. An encoder for encoding an image region using a transform, the encoder comprising:

means for generating for each transform point a double difference coefficient, wherein the double difference coefficient comprises a difference between a raw difference coefficient and a modeled difference coefficient; and

means for encoding as an adaptive difference coefficient for each transform point  
5 either the double difference coefficient or the raw difference coefficient, wherein whether the double difference coefficient or the raw difference coefficient is selected to be the adaptive difference coefficient depends on which one provides more efficient coding.

12. A decoder for decoding an image region using a transform, the decoder comprising:

10 means for receiving adaptive difference coefficients from an encoder;

means for modeling an image to generate a modeled region;

means for transforming the modeled region to generate modeled difference coefficients;

means for determining corrective difference coefficients using the adaptive difference  
15 coefficients and the modeled difference coefficients; and

means for inverse transformation using the corrective difference coefficients.

13. A system for decoding and encoding an image region using a transform, the system comprising:

an encoder including (a) means for generating for each transform point a double  
20 difference coefficient, wherein the double difference coefficient comprises a difference between a raw difference coefficient and a modeled difference coefficient, and (b) means for encoding as an adaptive difference coefficient for each transform point either the double difference coefficient or the raw difference coefficient, wherein whether the double difference coefficient or the raw difference coefficient is selected to be the adaptive  
25 difference coefficient depends on which one provides more efficient coding; and

a decoder including (a) means for receiving the adaptive difference coefficients from the encoder, (b) means for modeling the image region to generate a modeled region, (c) means for transforming the modeled region to generate modeled difference coefficients, (d) means for determining corrective difference coefficients using the adaptive difference

5 coefficients and the modeled difference coefficients, and (e) means for inverse transformation using the corrective difference coefficients.